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Ionospheric Data Report — August 1964

IONOSPHERIC DATA: BANGKOK, THAILAND

Compiled by: VICHAI T. NIMIT

Prepared for:

U.S. ARMY ELECTRONICS LABORATORIES
FORT MONMOUTH, NEW JERSEY

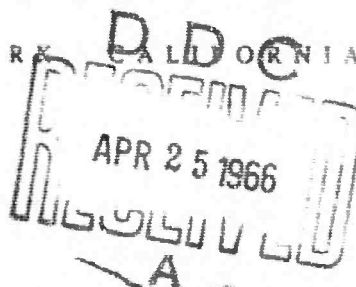
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SUPREME COMMAND HEADQUARTERS
BANGKOK, THAILAND



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(7) Ionospheric Data Report for Aug 64,

(11) May 65

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(6) IONOSPHERIC DATA: BANGKOK, THAILAND.

Prepared for:

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1 INTRODUCTION

Ionospheric observations are being carried out at the Laboratory of the Military Research and Development Center at Bangkok, Thailand, a joint United States-Thailand organization. A Model C-2 vertical-incidence sounder supplied and operated by the United States Army Radio Propagation Agency has been installed there. Table I gives pertinent information about the site.

Table I
VERTICAL-INCIDENCE SOUNDER SITE
AT BANGKOK, THAILAND

Geographic		Geomagnetic	
Latitude	Longitude	Latitude	Longitude
13.73°N	100.57°E	2.5°N	169.83°E

Dip angle: 10°N

Distance from dip equator: 450 km

Equipment:

Instrument: Type C2 (automatic)

PRF: 60 pps

Frequency sweep time: 30 sec

Frequency sweep range: 1 to 25 Mc

Pulse duration: 50 μ sec

Peak pulse power: approximately 10 kw.

The cooperation and participation of staff members of the Thailand Ministry of Defense and the support of the United States Advanced Research

Projects Agency, the United States Army Electronics Laboratories, and the United States Army Radio Propagation Agency made it possible for the data presented in this report to be accumulated.

II TERMINOLOGY AND SYMBOLS

The terminology and symbols used in this data report are in accordance with the conventions established by the World Wide Soundings Committee.¹

A. TERMINOLOGY

$\left. \begin{array}{l} f_o F_2 \\ f_o F_1 \\ f_o E \end{array} \right\}$	The ordinary wave critical frequency for the F ₂ and F ₁ layers and the E region, respectively.
$f_o E_s$	The ordinary wave top frequency corresponding to the highest frequency at which a mainly continuous E _s trace is observed.
$f_b E_s$	The blanketing frequency of an E _s layer i.e., the lowest ordinary wave frequency at which the E _s layer begins to become transparent. (This is usually determined from the minimum frequency at which reflections from layers at greater heights are observed.)
f_{min}	The frequency below which no echoes are observed.
$M(3000)F_2$	The maximum usable frequency factor for a path of 3000 km for transmission by the F ₂ layer.
$h' F_2$	The minimum virtual height of the ordinary wave trace for the highest stable stratification in the F region.
$h' F$	The most significant F-region virtual height parameter, that for the lowest F-region stratification. (Thus $h' F$ is identical with the current $h' F_2$ when F-region stratification is absent, i.e., at night, and with current $h' F_1$ when F ₁ stratification is present.)

¹W. R. Piggott and K. Rawer, URSI Handbook of Ionogram Interpretation and Reduction of the World Wide Sounding Committee (Elsevier Publishing Company, Amsterdam, London, New York, 1961).

B. DESCRIPTIVE LETTERS

Certain effects observed on ionograms may make it difficult or impossible to obtain accurate numerical values. The descriptive letters listed below, when used alone indicate, in general, the presence of a phenomenon that may have influenced the measurement. Qualifying letters (Sec. C) indicate the nature of the uncertainty.

- A A lower thin layer present, e.g., E_s
- B Absorption in the vicinity of f_{min}
- C Any non-ionospheric reason
- D The upper limit of the normal frequency range
- E The lower limit of the normal frequency range
- F Spread echoes present
- G Ionization density of the layer too small for measurement
- H Stratification present
- L No sufficiently definite cusp between layers of the trace
- M Ordinary and extraordinary components indistinguishable
- N Conditions such that the measurement cannot be interpreted
- O Measurement referring to the ordinary component
- R Attenuation in the vicinity of a critical frequency
- S Interference or atmospherics
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful
- V Forked trace
- W Echo lying outside the height range recorded
- X Measurement referring to the extraordinary component
- Y Intermittent trace
- Z Third magneto-ionic component present.

C. QUALIFYING LETTERS

- D Greater than. . .
- E Less than. . .

- I An interpolated value
- J Ordinary component characteristic deduced from the extraordinary component
- O Extraordinary component characteristic deduced from the ordinary component
- T Value determined by a sequence of observations, the actual observation being inconsistent or doubtful
- U Uncertain numerical value
- Z Measurement deduced from the third magneto-ionic component.

D. DESCRIPTION OF STANDARD TYPES OF E_s

The eight standard types of E_s are identified by lower-case letters: f, l, c, h, q, r, a, and s. These letters suggest the corresponding names, flat, low, cusp, high, equatorial, retardation, auroral, and slant, respectively, but are not restrictive. The letter n is used to designate an E_s trace that does not correspond to one of the eight types. The classifications are:

- f An E_s trace showing no appreciable increase of height with frequency, usually relatively solid at most latitudes. (This classification may be used only at night; it appears that flat E_s traces observed in the daytime are classified according to their virtual height: h or l.)
- l A flat E_s trace at or below the normal E-region minimum virtual height in the day or below the E-region minimum virtual height at night.
- c An E_s trace showing a relatively symmetrical cusp at or below $f_o E$. (This is usually continuous with the normal E trace, although when the deviative absorption is large, part or all of the cusp may be missing--usually a daytime type.)
- h An E_s trace showing a discontinuity in height with the normal E-region trace at or above $f_o E$ and an asymmetrical cusp. (The low-frequency end of the E_s trace lies clearly above the high-frequency end of the normal E trace--usually a daytime type.)
- q An E_s trace that is diffuse and nonblanketing over a wide frequency range, the spread being most pronounced at the upper edge of the trace. (This type is common in daytime in the vicinity of the magnetic equator.)
- r An E_s trace that is nonblanketing over part or all of its frequency range, showing an increase in virtual height at the high-frequency

and similar to group retardation. (This is distinguished from the usual group retardation—as in the case of an occulting thick E region—by the lack of group retardation in the F traces at corresponding frequencies and the lack of complete blanketing.)

- a An E_s pattern having a well-defined flat or gradually rising lower edge with stratified and diffuse (spread) traces present above it. (These sometimes extend over several hundred kilometers of virtual height.)
- s A diffuse E_s trace that rises steadily with frequency, usually emerging from another type of E_s trace. (The rising trace alone is classified as s; the horizontal trace is classified separately. At high latitudes, the plant trace usually starts to rise from a horizontal E_s trace, such as l or f, at frequencies that greatly exceed the E-region critical frequency, e.g., about 6 Mc; whereas at low latitudes it usually rises from equatorial-type E_s, q, c, or h, at frequencies near the regular E critical frequency. Type s is never used to determine f_oE unless echoes clearly identifiable as E_s echoes are seen.)
- n An E trace that cannot be classified as one of the standard types. (This must not be used for intermediate cases between any two classes. A choice should always be made whenever possible, even if it is doubtful.)

E. MULTIPLE REFLECTIONS FROM E_s

When the ionogram shows the presence of multiple reflections from E_s, the number of traces seen will be recorded with the letter indicating the type.

Characteristic: fmin

IONOSPHERIC

Sweep: 1 Mc to 25 Mc

August 1964

Observed at:

Bangkok, Thailand

Lat. 13.73° N, Long. 100.57° E

105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	024*	021	E020E	021	023	024	023	024	E028S	029	041	B
2	027	026	C	C	C	C	C	C	C	C	029	031
3	024	023	026	023	B	026	026	E029S	030	029	028	030
4	027	026	023	026	024	B	026	031	C	032	034	032
5	024	023	024	022	023	B	026	027	029	027	039	031
6	023	023	021	021	L022S	022	E024S	028	027	027	033	B
7	024	025	024	024	C	023	025	025	025	035	039	036
8	024	025	023	023	023	022	025	025	E030C	034	031	036
9	C	C	C	C	C	C	C	C	C	C	C	E031
10	026	024	024	024	025	E024S	E023S	025	026	025	031	030
11	023	022	023	024	B	B	E024S	026	031	030	036	031
12	E023S	024	023	023	023	023	E023S	026	029	030	020	030
13	E022S	023	021	021	022	024	E022S	E023S	E023S	027	034	030
14	E025S	U026C	U025C	U024C	B	B	U026C	U027C	U030C	U031C	U030C	029
15	E025S	U023C	U024C	U024C	U024C	U024C	E026S	E025S	E026S	U030C	U030C	027
16	024	023	021	021	025	B	023	024	028	027	032	032
17	023	023	023	022	021	021	023	023	027	028	026	E031
18	028	024	024	023	023	022	023	025	026	028	036	031
19	U028C	U025C	U026C	B	B	U022C	U024C	U025C	027	028	028	027
20	023	022	023	023	023	023	E023S	E023S	023	026	028	031
21	022	022	022	023	024	023	026	027	027	033	028	034
22	025	026	025	025	023	B	E023S	E027S	E027S	027	E032S	E031
23	B	B	021	B	B	B	E023S	E027S	E030S	E027S	E028S	030
24	023	021	022	B	B	B	E024S	E028S	E028S	026	027	031
25	026	022	026	021	B	B	023	E027C	E027S	027	026	027
26	025	022	023	020	021	026	025	025	026	C	C	C
27	023	024	023	B	B	B	E024S	E027S	E027S	031	035	030
28	025	034	023	B	B	B	024	023	027	028	029	031
29	025	023	023	020	021	021	E024S	E024S	E027S	028	028	031
30	B	B	025	C	C	C	C	C	C	C	C	031
31	026	024	022	025	022	024	E023S	025	030	034	036	041
Median	024	023	023	023	023	023	024	025	027	028	030	031
Count	28	28	29	23	18	17	28	28	27	27	28	28
UQ	025	025	024	024	024	024	025	027	030	031	035	031
LQ	023	023	022	021	022	022	023	025	027	027	028	031
QR	2	2	2	3	2	2	2	2	3	4	7	4

* Tabulation of 024 = 2.4 Mc.

ATTENTION: The accuracy of the frequency parameters in this table of the G-2 sounder from 15 July to 21 September 1964. The error is estimated to have been approximately 1 Mc.

PHERIC DATA
 25 Mc in 0.5 minute
 est 1954

	11	12	13	14	15	16	17	18	19	20	21	22	23
	B	B	040	030	036	E029S	E028S	E026S	E024S	025	E024S	E024S	024
	032	030	031	029	026	E027S	E028S	026	028	E024S	026	025	025
	030	034	030	030	032	030	029	025	027	028	028	029	027
	032	030	035	E026S	023	024	024	E024S	024	E022S	029	023	024
	032	031	031	033	026	026	E027S	E026S	023	E022S	024	E023S	024
	B	B	032	026	027	024	024	E023S	E024S	030	026	027	B
	038	037	036	046	036	034	020	C	C	025	025	027	026
	036	B	C	043	027	E040C	029	026	E050C	C	C	C	C
	E032S	C	C	C	C	C	C	C	C	E024S	E023S	E024S	E024S
	030	037	042	029	028	027	125	E025S	026	028	027	026	025
	037	037	036	034	029	028	028	E024S	E024S	024	024	024	024
	030	038	033	033	028	029	026	025	024	024	E022S	E022S	E022S
	035	U038C	U032C	U031C	U038C	U040C	E026S	E026S	E026S	E026S	E026S	E027S	E026S
	020	033	028	039	025	U036C	U031C	U030S	U029C	E025S	E025S	E023S	U029C
	027	E028S	039	045	037	E026S	031	E024S	026	024	E021S	E022S	023
	032	033	046	040	027	029	023	E023S	E023S	E021S	026	023	025
	E031S	E032S	E032S	E027S	027	023	022	E023S	022	E021S	022	024	025
	035	034	033	031	023	E024S	E024S	E024S	U026C	E024S	U028C	U028C	B
	021	031	032	028	027	023	024	E023S	026	024	023	024	025
	035	034	046	045	030	E027S	027	024	E027S	023	025	023	E022S
	034	B	B	B	B	026	027	026	023	025	026	024	022
	E032S	039	029	026	026	029	E027S	E024S	E025S	E027S	028	025	B
	038	E027S	E027S	026	028	E027S	E027S	E023S	E023S	027	027	023	023
	027	037	036	029	025	E027S	E028S	E023S	E027S	E027S	E027S	E027S	B
	031	035	038	051	033	032	028	026	023	025	029	024	025
	C	C	C	C	034	E026S	E028S	E027S	026	027	023	025	025
	036	E030S	E028S	E027S	033	028	C	C	023	025	023	025	025
	035	041	033	033	031	027	030	027	037	026	025	026	026
	035	037	036	034	033	026	025	023	023	024	024	027	B
	035	031	034	031	028	028	026	026	E024S	026	027	024	B
	040	037	037	036	027	E028S	026	025	E023S	026	E024S	025	025
	033	034	033	031	028	027	027	025	024	025	025	024	025
	28	25	27	28	29	30	29	28	29	30	30	30	24
	035	037	037	038	033	029	028	026	026	026	027	026	025
	031	031	031	029	027	026	024	023	023	024	024	024	024
	4	6	6	9	6	3	4	3	3	2	3	2	1

n this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

J

Characteristic: f_oF₂

IONOSPHERIC
Sweep: 1 Mc to 25 Mc

August

Observed at:

Bangkok, Thailand

Lat. 13.7° N, Long. 100.5° E

105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	A	A	A	A	A	A	031*	050	066	066	A	
2	F	A	C	C	C	C	C	C	C	C	069	06
3	H	U041F	F	F	F	B	A	U038F	053	073	U065C	06
4	U057S	030F	U029F	U031S	034	B	035	056	C	U060S	A	06
5	A	F	A	A	A	B	036	057	057	066	069H	06
6	030	A	A	A	025	A	A	045	053	060	A	
7	A	A	A	A	C	A	U036S	050	U050S	A	A	
8	F	U041F	041	032	A	027	05	051	055	058	062H	06
9	C	C	C	C	C	C	C	C	C	C	C	06
10	035F	F	F	F	F	F	U030F	057	053	058	U061S	06
11	027	027	026	026	B	B	037	059	061	066H	060H	06
12	U036S	U030S	A	025	A	A	U031S	U051S	060	071	078	06
13	044	F	A	F	F	A	029	050	058	U062S	062H	06
14	U038C	U033C	F	A	B	B	U036C	U054C	U052C	056C	U060C	06
15	U032C	U032C	U027C	U029C	U026C	A	U034C	U055C	U068C	U066C	U060C	06
16	031	A	U029F	024	027	B	029	052	071	079	072H	06
17	040	U043F	055	F	U026F	A	035	055	066	066	063H	06
18	051	U045F	F	F	F	F	U039F	052	061	067	073	06
19	F	F	F	B	B	A	U030C	U052C	067	071	066H	06
20	A	F	A	A	A	A	U027S	057	065	U066S	077	06
21	U030S	U030F	F	A	A	A	031	052	066	072	066H	06
22	F	F	F	F	F	B	035	U060S	U072S	U060S	U053S	06
23	B	B	023	B	B	B	031	054	061	064H	062H	06
24	025	031	027	B	B	B	037	058	U075S	075H	063H	06
25	A	A	A	A	B	B	038	056	058	065	066H	06
26	A	A	A	A	A	A	031	053	063	C	C	
27	U030S	F	A	A	B	B	B	036	052	062	U065S	U0
28	A	U036F	U026F	B	B	B	030	057	065	081	U070S	U0
29	A	A	F	F	A	A	034	055	D050R	061	061H	U0
30	B	B	F	C	C	C	C	C	C	C	C	
31	A	F	A	A	A	A	A	062	U061S	068	U072S	06
Median	032	033	027	028	026	027	035	054	061	066	065	06
Count	15	9	9	6	5	1	26	28	27	26	24	06
UQ	040	039	035	031	031	-	036	057	066	068	069	06
LQ	030	031	026	025	026	-	031	052	057	061	062	06
QR	10	8	9	6	5	-	5	5	9	7	7	06

* Tabulation of 031 = 3.1 Mc.

ATTENTION: The accuracy of the frequency parameters in this of the C-2 sounder from 15 July to 21 September 1964. The error is estimated to have been approximately 1 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute
August 1964

0	11	12	13	14	15	16	17	18	19	20	21	22	23
A	B	B	U052S	U055S	062	071	073	070	068	065	053	046	037
069	061H	060H	061H	062	060H	065	068	065	074	068	068	057	054
065C	066H	A	U057S	A	067	070	072	080	079	062	U042S	A	035
A	U055S	060H	068H	088	046	076	U075S	087	U100S	065	045	037	030
069H	063H	060H	060	067	D070S	078	082	085	085	074	053	038	A
A	B	B	065	067	072	082	091	073	U063S	035	A	A	B
A	A	A	A	054	059	069	074	C	C	A	A	F	F
062H	064	B	C	060	063	072	092	078	U067C	C	C	C	C
C	059H	C	C	C	C	C	C	C	C	065	068	060	U042S
061S	055H	U057S	063	063	062	065	066	074	070	061	053	U045S	U033F
060H	060	A	A	062	066	A	076	073	076	062	U054S	047	038
078	072H	A	058H	A	A	070	076	077	071	A	052	053	051
062H	A	A	A	U050C	U050C	A	U067C	U067C	U065C	U055C	U045C	U045C	U040C
060C	D055S	D052R	D055R	054H	U062S	U061C	U068C	U072C	U076C	U058C	U048C	040	U033C
060C	066H	061H	060H	069H	072	077	076H	086	092	076	055	045	035
072H	059H	057H	059H	060H	062H	065H	075	085	086	064	U059S	F	046
063H	059H	063H	066	073	075	U071S	072	U070S	066	U060S	U060S	062	U060S
073	078	058H	064H	060H	065	070	U068S	074	U080C	U065C	U055C	U035C	B
066H	063H	060H	065	072	075	082	091	D095S	087	060	038	040	F
077	071	065	075	078	080H	087	088	096	096	072	U049S	037	033
068H	065H	B	B	B	B	066	068	079	067	U061F	063	064	F
050S	U050S	U050S	060	064	074	081	U100S	U094S	U072S	052	039	032	B
062H	057	060	063	065	072	074	086	082	U076S	054	039	033	029
063H	055	U060S	063	066	067	081	U094S	091	080	060	037	029	B
066H	067H	A	068	068	074	082	086	091	081	071	049	U038S	A
C	C	C	C	C	066	070	079	086	082	064	051	040	034
065S	U063S	U061S	061	065	065	072	C	C	073	060	050	040	032
070S	U067S	U061S	066	063	066	078	U103S	090	074	054	040	034	A
064H	U062S	055	054	050	055	065	085	093	078	048	034	A	B
C	A	A	069	073	075	082	100	090	085	050	034	030	B
072S	067S	U068S	071	084	088	107	U105S	A	U094S	A	U081F	U070F	072
065	062	060	063	065	066	072	076	082	076	061	051	040	036
24	25	18	24	26	28	28	29	27	29	27	28	25	17
069	066	061	066	069	074	081	091	090	085	065	055	050	051
062	057	057	060	060	062	070	072	073	071	055	044	036	033
7	9	4	6	9	12	11	19	17	14	10	11	14	18

ers in this bulletin is questionable because of an error in frequency markers
064. The original frequency parameters have been increased by 1 Mc since the
.

2

Characteristic: M(3000)F2

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in

August 1964

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	A	A	A	A	A	A	240+	320	280	250	A	B
2	F	A	C	C	C	C	C	C	C	C	250	225H
3	F	F	F	F	B	A	U330F	330	340	U300C	240H	U240S
4	270	F	U320F	U340S	390	B	340	230	C	U250S	A	U270S
5	A	F	A	A	A	B	350	340	310	270	245H	230H
6	260	A	A	A	340	A	A	300	260	245	A	B
7	A	A	A	A	C	A	S	290	U300S	A	A	A
8	F	U290F	350	360	A	230	310	330	280	240	235H	240
9	C	C	C	C	C	C	C	C	C	C	C	210H
10	U290F	F	F	F	F	F	U360F	370	340	300	U270S	240H
11	310	300	350	350	B	B	350	340	300	250H	230H	250
12	U300S	U310S	A	360	A	A	U336S	U360S	320	300	260	220H
13	300	F	A	F	F	A	310	350	300	U240S	210H	A
14	U340C	U280C	F	A	B	B	U370C	U350C	U320C	U260C	U215C	S
15	U320C	U350C	U350C	U360C	U330C	A	U340C	U330C	U310C	U260C	U250C	210H
16	330	A	U340F	350	340	B	330	340	330	300	230H	205H
17	290	U320F	365	F	U210F	A	340	330	300	260	225H	240H
18	270	U280F	F	F	F	F	U360F	370	360	340	300	230
19	F	F	F	B	B	A	U340C	U335C	315	270	230H	210H
20	A	F	A	A	A	A	U340S	340	330	U300S	265	260
21	U300S	U300F	F	A	A	A	350	330	320	285	225H	215H
22	F	F	F	F	F	B	360	U330S	U310S	U240S	U250S	U250S
23	B	B	380	B	B	B	340	330	295	255H	200H	260
24	340	350	370	B	B	B	350	340	U320S	250H	210H	260
25	A	A	A	A	B	B	360	380	350	310	290H	220H
26	A	A	A	A	A	A	350	350	350	C	C	C
27	U300F	A	A	B	B	B	360	360	360	300	U250S	U250S
28	A	U340F	U270F	B	B	B	330	350	330	305	U250S	U220S
29	A	A	F	F	A	A	360	365	R	290	230H	U210S
30	B	B	F	C	C	C	C	C	C	C	C	A
31	A	F	A	A	A	A	A	370	U320S	300	U280S	U250S
Median	300	310	350	355	340	-	340	340	320	270	245	235
Count	14	10	9	6	5	1	25	28	26	26	24	24
UQ	320	340	370	360	365	-	360	360	330	300	255	250
LQ	290	290	345	350	270	-	330	330	300	250	225	218
QR	30	50	25	10	95	-	30	30	30	50	27	32

* Tabulation of 240 = factor of 2.4.

ATTENTION: The accuracy of the frequency parameters in this bulletin of the C-2 sounder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

PHERIC DATA
 25 Mc in 0.5 minute
 1st 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
	B	B	U250S	U240S	230	280	310	320	325	320	360	360	360
	225H	240H	240H	250	250H	245	260	280	320	320	315	310	310
H	U240S	A	U215S	A	270	280	205	300	330	360	U340S	A	290
	U270S	230H	250H	280	290	280	U285S	290	U330S	360	360	320	330
H	230H	215H	260	260	S	290	300	310	330	345	330	310	A
	B	B	245	260	275	315	350	340	U350S	230	A	A	B
	A	A	A	260	250	260	290	C	C	A	A	F	F
H	240	B	C	250	260	230	340	350	U340C	C	C	C	C
	210H	C	C	C	C	C	C	C	C	330	330	335	U315S
S	240H	U230S	220	240	250	260	270	310	340	320	330	U350S	U310F
H	250	A	A	270	260	A	300	300	300	305	U310S	310	315
	220H	A	230H	A	A	260	300	310	320	A	310	310	350
H	A	A	A	U205C	U260C	A	U300C	U330C	U350C	U350C	U330C	U330C	U340C
C	S	R	R	240H	U240S	U270C	U300C	U340C	U350C	U345C	U340C	350	U315C
C	210H	220H	260H	230H	270	290	280H	305	330	350	335	350	310
H	205H	235H	230H	225H	225H	250H	280	300	330	310	U300S	F	280
H	240H	230H	250	270	275	U250S	260	U260S	300	U300S	U300S	290	U300S
	230	240H	210H	240H	270	280	U300S	310	U340C	U340C	U340C	U330C	B
H	210H	240H	250	270	280	290	320	S	340	320	210	300	F
	260	255	270	270	270H	280	290	300	360	360	U330S	310	310
H	215H	B	B	B	B	240	270	320	310	U280F	290	300	F
S	U250S	U270S	250	240	260	310	U340S	U330S	U350S	340	330	330	B
H	260	240	240	245	280	300	330	330	U340S	340	340	320	300
H	260	U220S	250	250	250	300	U330S	340	350	360	350	320	B
H	220H	A	240	260	290	255	-	380	320	360	-	U330S	A
	C	C	C	C	290	260	290	320	330	320	330	320	320
S	U250S	U230S	260	240	250	280	C	C	350	330	310	320	300
S	U220S	U240S	215	250	265	290	U340S	350	340	350	330	295	A
H	U210S	240	250	260	280	260	330	350	360	350	340	A	B
	A	A	270	280	280	350	330	350	350	350	350	340	B
S	U250S	U260S	270	280	280	320	U330S	A	U260S	A	U300F	U330F	300
3	235	240	250	250	270	280	300	320	340	340	330	320	310
4	24	17	23	26	27	28	28	26	29	27	27	25	18
5	250	240	260	270	280	290	330	340	350	350	340	332	320
6	218	230	230	240	250	260	283	300	323	320	310	310	300
7	32	10	30	30	30	30	47	40	27	30	30	22	20

in this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

2

Characteristic: MUF_2

IONOSPHERIC
Sweep: 1 Mc to 25 Mc

August 1964

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
 105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	C	C	C	C	530	470
3	-	-	-	-	-	-	-	-	-	-	440	450
4	-	-	-	-	-	-	-	-	C	540	A	420
5	-	-	-	-	-	-	-	-	-	-	340	440
6	-	-	-	-	-	-	-	-	-	370	A	B
7	-	-	-	-	-	-	-	-	-	-	A	A
8	-	-	-	-	-	-	-	-	350	400	410	420
9	-	-	-	-	-	-	C	C	C	C	C	420
10	-	-	-	-	-	-	-	-	-	-	450	490
11	-	-	-	-	-	-	-	-	-	420	420	420
12	-	-	-	-	-	-	-	-	-	-	E390A	390
13	-	-	-	-	-	-	-	-	-	480	E500A	A
14	-	-	-	-	-	-	-	-	-	-	450	E580
15	-	-	-	-	-	-	-	-	-	-	390	440
16	-	-	-	-	-	-	-	-	300	320	370	420
17	-	-	-	-	-	-	-	-	-	E450A	400	420
18	-	-	-	-	-	-	-	-	-	280	E360A	E570
19	-	-	-	-	-	-	-	-	280	300	400	470
20	-	-	-	-	-	-	-	-	-	-	370	370
21	-	-	-	-	-	-	-	-	-	360	380	450
22	-	-	-	-	-	-	-	-	E300A	420	470	520
23	-	-	-	-	-	-	-	-	-	400	410	420
24	-	-	-	-	-	-	-	-	-	360	480	430
25	-	-	-	-	-	-	-	-	-	-	390	E560
26	-	-	-	-	-	-	-	-	270	C	C	C
27	-	-	-	-	-	-	-	-	-	-	E480A	410
28	-	-	-	-	-	-	-	-	-	320	370	420
29	-	-	-	-	-	-	-	-	-	-	420	460
30	-	-	-	-	-	-	-	-	-	-	-	A
31	-	-	-	-	-	-	-	-	-	340	370	390
Median	-	-	-	-	-	-	-	-	300	370	405	430
Count	-	-	-	-	-	-	-	-	5	15	24	24
UQ	-	-	-	-	-	-	-	-	325	420	450	470
LQ	-	-	-	-	-	-	-	-	275	320	375	420
QR	-	-	-	-	-	-	-	-	50	100	75	50

* Tabulation of 510 = 510 km.

ATTENTION: The accuracy of the frequency parameters in this table is of the G-2 sounder from 15 July to 21 September 1964. The maximum error is estimated to have been approximately 1 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute
gust 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
-	-	-	510*	470	420	330	-	-	-	-	-	-	-
30	470	440	450	400	420	430	-	-	-	-	-	-	-
40	450	A	500	A	370	350	E700A	-	-	-	-	-	-
A	420	480	370	350	340	330	-	-	-	-	-	-	-
40	440	470	410	400	330	-	-	-	-	-	-	-	-
A	B	B	400	380	350	-	-	-	-	-	-	-	-
	A	A	A	450	410	-	-	-	-	-	-	-	-
10	420	B	C	420	370	330	-	-	-	-	-	-	-
C	420	C	C	C	C	C	C	-	-	-	-	-	-
50	490	500	450	400	400	360	-	-	-	-	-	-	-
20	420	A	A	E370A	370	A	-	-	-	-	-	-	-
90A	390	A	E490A	A	A	E400A	300	-	-	-	-	-	-
00A	A	A	A	E760A	470	A	-	-	-	-	-	-	-
50	E580A	E550A	490	470	420	350	-	-	-	-	-	-	-
90	440	460	430	410	340	-	-	-	-	-	-	-	-
70	420	470	460	470	410	390	-	-	-	-	-	-	-
00	420	420	400	370	350	330	E390A	-	-	-	-	-	-
60A	E570A	450	440	420	360	330	270	-	-	-	-	-	-
00	470	420	400	340	360	-	-	-	-	-	-	-	-
70	370	420	380	370	370	-	-	-	-	-	-	-	-
80	450	B	B	B	B	E380A	-	-	-	-	-	-	-
70	520	480	410	400	320	-	-	-	-	-	-	-	-
10	420	440	410	370	350	-	-	-	-	-	-	-	-
80	430	610	400	390	370	-	-	-	-	-	-	-	-
90	E560A	A	E410A	380	320	-	-	-	-	-	-	-	-
C	C	C	C	C	270	-	-	-	-	-	-	-	-
180A	410	440A	420	400	340	-	-	-	-	-	-	-	-
370	420	410	440	400	-	-	-	-	-	-	-	-	-
420	460	480A	460	440	380	-	-	-	-	-	-	-	-
-	A	A	380	350	350	-	-	-	-	-	-	-	-
370	390	460	380	350	370	280	280	-	-	-	-	-	-
405	430	455	415	400	370	350	300	-	7	-	-	-	-
24	25	18	24	26	27	13	5	-	7	-	-	-	-
450	470	480	455	420	400	385	545	-	-	-	-	-	-
375	420	440	400	370	340	330	275	-	-	-	-	-	-
75	50	40	55	50	60	55	270	-	-	-	-	-	-

ers in this bulletin is questionable because of an error in frequency markers
64. The original frequency parameters have been increased by 1 Mc since the

2

Characteristic: h'f

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in

August 1964

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	A	A	A	A	A	A	E470A	220*	200	200	A	B
2	350	A	C	C	C	C	C	C	C	C	A	190
3	330	330	290	260	B	A	250	210	220	180	170	170
4	E420B	340	E290B	280	220	B	240	210	C	A	A	A
5	A	320	A	A	A	B	250	220	230	200	210	190
6	E440A	A	A	A	E300B	A	A	210	E350A	A	A	B
7	A	A	A	A	C	A	300	240	E220A	A	A	A
8	305	310	220	220	A	E570A	250	220	A	E270A	E230A	200
9	C	C	C	C	C	C	C	C	C	C	C	170
10	320	300	300	310	350	340	250	210	200	200	200	E220A
11	300	240	230	E300B	B	B	230	220	200	200	190	A
12	330	360	A	220	A	A	260	230	250	E270A	A	A
13	280	380	A	230	230	A	E340A	230	250	240	A	A
14	250	330	370	A	B	B	230	230	210	200	A	A
15	290	240	280	E290A	E350A	A	260	220	E250A	240	190	170
16	290	A	240	240	E290B	B	260	210	A	200	180	170
17	320	280	220	210	E610A	A	340	210	230	A	200	200
18	330	330	330	310	300	250	230	220	220	A	A	A
19	290	270	240	B	B	A	300	E240A	A	190	180	E230A
20	A	260	A	A	A	A	270	240	210	200	190	A
21	320	300	360	A	A	A	270	210	210	A	E210A	200
22	300	280	280	300	250	B	230	220	A	200	180	180
23	E	B	E260B	B	B	B	240	220	200	180	200	200
24	300	250	220	B	B	B	230	200	210	210	210	170
25	A	A	A	A	B	B	230	210	E250A	200	180	A
26	A	A	A	A	A	A	260	220	A	C	C	C
27	300	A	A	B	B	B	240	230	210	E250A	A	A
28	A	250	240	B	B	B	290	230	240	200	190	180
29	A	A	230	250	A	A	230	220	E240A	E280A	A	A
30	B	B	330	C	C	C	C	C	C	C	C	A
31	A	370	A	A	A	A	A	250	E280A	A	A	210
Median	305	300	270	260	300	340	250	220	220	200	190	190
Count	19	19	18	13	9	3	26	28	22	20	16	16
UQ	330	330	300	300	350	455	270	230	250	240	205	200
LQ	290	260	230	225	240	295	230	210	210	200	180	170
QR	40	70	70	75	110	160	40	20	40	40	25	30

* Tabulation of 220 = 220 km.

ATTENTION: The accuracy of the frequency parameters in this bulletin of the C-2 sounder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 o 25 Mc in 0.5 minute
 gust 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
	B	B	180	180	190	170	220	220	225	220	210	210	220
	190	200	190	180	200	E230A	210	220	230	220	230	250	280
	170	A	B	A	A	A	A	260	250	220	250	A	340
	A	200	190	200	A	A	210	230	220	210	210	240	260
	190	A	200	A	A	210	200	220	220	220	220	270	A
	B	B	B	A	180	E220A	210	230	220	E520B	A	A	B
	A	A	B	B	200	200	210	C	C	A	A	240	300
0A	200	B	C	B	210	C	200	240	250	C	C	C	C
	170	C	C	C	C	C	C	C	C	230	240	230	270
	E220A	200	B	200	210	215	210	230	250	260	250	250	310
	A	A	B	A	200	A	230	240	240	240	280	280	280
	A	A	B	A	A	A	A	300	300	A	280	270	260
	A	A	B	A	A	A	220	230	220	210	220	250	250
	A	A	A	200	180	230	225	220	220	210	230	240	E320B
	170	200	170	B	200	190	210	220	220	210	220	230	290
	170	170	B	200	200	210	210	230	230	240	270	280	320
	200	E210A	200	200	170	210	A	E360A	E300A	E310A	260	280	300
	A	200	160	200	A	A	A	260	240	220	200	270	B
	E230A	205	210	A	A	210	240	240	220	240	520	300	360
	A	A	B	B	190	210	240	230	220	220	230	260	300
0A	200	B	B	B	B	A	210	240	260	280	270	270	300
	180	190	180	200	200	210	210	220	210	230	260	270	B
	200	A	A	A	220	200	210	230	220	220	250	260	300
0	170	160	180	180	170	210	230	240	210	200	230	E350S	B
30	A	A	A	B	210	210	U220C	270	230	230	U240C	300	A
	C	C	C	C	110	220	220	210	220	220	240	270	280
1	A	A	A	A	190	210	C	C	220	230	270	290	340
30	180	230A	200	170	250	260	210	220	220	220	240	320	A
A	A	A	E210A	A	E220A	240	270	230	210	210	250	A	B
C	A	A	200	A	A	230	0	230	220	220	250	250	B
A	210	A	200	200	A	A	A	A	360	A	250	260	280
90	190	200	190	200	200	210	210	230	220	220	245	270	300
16	16	11	14	12	20	22	24	27	29	28	28	27	21
05	200	205	200	200	210	230	227	240	245	240	260	280	315
30	170	190	180	180	185	210	210	220	220	220	230	250	275
25	30	15	20	20	25	20	17	20	25	20	30	30	40

in this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the



Characteristic: foF1

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in
August 1964

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	L	L	L	A	B
2	-	-	-	-	-	-	C	C	C	C	A	044
3	-	-	-	-	-	-	-	L	L	L	041	042
4	-	-	-	-	-	-	-	L	C	A	A	A
5	-	-	-	-	-	-	-	L	L	L	042	044
6	-	-	-	-	-	-	-	L	L	A	A	B
7	-	-	-	-	-	-	-	L	L	A	A	A
8	-	-	-	-	-	-	-	L	A	041	042	045
9	-	-	-	-	-	-	C	C	C	C	C	043
10	-	-	-	-	-	-	-	L	L	L	044	042
11	-	-	-	-	-	-	-	L	L	041	042	A
12	-	-	-	-	-	-	-	L	L	L	A	A
13	-	-	-	-	-	-	-	L	L	042	A	A
14	-	-	-	-	-	-	-	L	L	L	A	A
15	-	-	-	-	-	-	-	L	L	L	044	044
16	-	-	-	-	-	-	-	L	A	041	042	043
17	-	-	-	-	-	-	-	L	L	A	041	043
18	-	-	-	-	-	-	-	L	L	A	A	A
19	-	-	-	-	-	-	-	L	A	040	040	043
20	-	-	-	-	-	-	-	L	L	L	042	A
21	-	-	-	-	-	-	-	L	L	A	042	043
22	-	-	-	-	-	-	-	L	A	041	042	042
23	-	-	-	-	-	-	-	L	L	041	042	043
24	-	-	-	-	-	-	-	L	L	042	043	043
25	-	-	-	-	-	-	-	L	L	L	042	A
26	-	-	-	-	-	-	-	L	A	C	C	C
27	-	-	-	-	-	-	-	L	L	L	A	A
28	-	-	-	-	-	-	-	L	L	042	044	045
29	-	-	-	-	-	-	-	L	L	L	A	A
30	-	-	-	C	C	C	C	C	C	C	C	A
31	-	-	-	-	-	-	-	L	L	A	A	043
Median	-	-	-	-	-	-	-	-	-	041	042	043
Count	-	-	-	-	-	-	-	-	-	9	16	16
UQ	-	-	-	-	-	-	-	-	-	042	043	044
LQ	-	-	-	-	-	-	-	-	-	041	042	043
QR	-	-	-	-	-	-	-	-	-	1	1	1

* Tabulation of 043 = 4.3 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin of the C-2 sounder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 o 25 Mc in 0.5 minute
 ugust 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
A	B	B	043*	042	042	041	L	-	-	-	-	-	-
A	044	044	042	042	041	041	L	-	-	-	-	-	-
11	042	A	A	A	A	A	A	-	-	-	-	-	-
A	A	043	044	041	A	A	L	-	-	-	-	-	-
42	044	A	042	A	A	L	L	-	-	-	-	-	-
A	B	B	A	A	041	L	L	-	-	-	-	-	-
A	A	A	A	B	040	L	L	-	-	-	-	-	-
42	045	B	C	B	041	C	L	-	-	-	-	-	-
C	043	C	C	C	C	C	C	-	-	-	-	-	-
44	042	042	B	042	041	041	L	-	-	-	-	-	-
42	A	A	A	A	043	A	L	-	-	-	-	-	-
A	A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	L	-	-	-	-	-	-
A	A	A	A	041	043	U042C	L	-	-	-	-	-	-
44	044	043	044	B	041	L	L	L	-	-	-	-	-
42	043	043	B	043	041	039	L	-	-	-	-	-	-
41	043	044	044	042	041	040	A	-	-	-	-	-	-
A	A	044	044	042	A	A	A	-	-	-	-	-	-
40	043	043	043	A	A	L	L	-	-	-	-	-	-
42	A	A	A	B	B	041	L	L	-	-	-	-	-
42	043	B	B	B	B	A	L	-	-	-	-	-	-
42	042	043	043	042	041	L	L	-	-	-	-	-	-
42	043	A	A	A	041	L	L	-	-	-	-	-	-
43	043	043	043	041	041	L	L	-	-	-	-	-	-
42	A	A	A	B	042	L	L	-	-	-	-	-	-
C	C	C	C	C	040B	L	L	-	-	-	-	-	-
A	A	A	A	A	041	L	C	-	-	-	-	-	-
44	045	043	044	041	L	L	L	-	-	-	-	-	-
A	A	A	042	A	041	L	A	-	-	-	-	-	-
C	A	A	045	A	A	L	A	-	-	-	-	-	-
A	043	A	043	044	A	A	A	-	-	-	-	-	-
42	043	043	043	042	041	041	-	-	-	-	-	-	-
16	16	11	14	12	15	7	-	-	-	-	-	-	-
43	044	044	044	042	041	041	-	-	-	-	-	-	-
42	043	043	043	041	041	040	-	-	-	-	-	-	-
1	1	1	1	2	-	1	-	-	-	-	-	-	-

es in this bulletin is questionable because of an error in frequency markers
 54. The original frequency parameters have been increased by 1 Mc since the

Characteristic: M(3000)F1

IONOSPHERIC
Sweep: 1 Mc to 25 Mc

August 1964

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	9	10	11
1	-	-	-	-	-	-	-	L	L	L	A	B
2	-	-	-	-	-	-	C	C	C	C	A	400
3	-	-	-	-	-	-	-	L	L	L	400	400
4	-	-	-	-	-	-	-	L	C	A	A	A
5	-	-	-	-	-	-	-	L	L	L	420	390
6	-	-	-	-	-	-	-	L	L	A	A	E
7	-	-	-	-	-	-	-	L	L	A	A	A
8	-	-	-	-	-	-	-	L	A	370	410	400
9	-	-	-	-	-	-	C	C	C	C	C	440
10	-	-	-	-	-	-	-	L	L	L	400	400
11	-	-	-	-	-	-	-	L	L	410	420	A
12	-	-	-	-	-	-	-	L	L	L	A	A
13	-	-	-	-	-	-	-	L	L	390	A	A
14	-	-	-	-	-	-	-	L	L	L	A	A
15	-	-	-	-	-	-	-	L	L	L	430	420
16	-	-	-	-	-	-	-	L	A	410	425	420
17	-	-	-	-	-	-	-	L	L	A	400	420
18	-	-	-	-	-	-	-	L	L	A	A	A
19	-	-	-	-	-	-	-	L	A	420	430	400
20	-	-	-	-	-	-	-	L	L	L	410	A
21	-	-	-	-	-	-	-	L	L	A	430	425
22	-	-	-	-	-	-	-	L	A	400	430	430
23	-	-	-	-	-	-	-	L	L	400	410	430
24	-	-	-	-	-	-	-	L	L	390	410	420
25	-	-	-	-	-	-	-	L	L	L	420	A
26	-	-	-	-	-	-	-	L	A	C	C	C
27	-	-	-	-	-	-	-	L	L	L	A	A
28	-	-	-	-	-	-	-	L	L	390	420	410
29	-	-	-	-	-	-	-	L	L	L	A	A
30	-	-	-	C	C	C	C	C	C	C	C	A
31	-	-	-	-	-	-	-	L	L	A	A	410
Median	-	-	-	-	-	-	-	-	-	400	420	410
Count	-	-	-	-	-	-	-	-	-	9	16	10
UQ	-	-	-	-	-	-	-	-	-	410	427	420
LQ	-	-	-	-	-	-	-	-	-	390	410	400
QR	-	-	-	-	-	-	-	-	-	20	17	2

* Tabulation of 430 = factor of 4.3.

ATTENTION: The accuracy of the frequency parameters in this table is of the C-2 sounder from 15 July to 21 September 1964. The overall error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 25 Mc in 0.5 minute
 August 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
B	B	430*	420	420	400	L	-	-	-	-	-	-
400	410	435	400	405	400	L	-	-	-	-	-	-
400	A	A	A	A	A	A	-	-	-	-	-	-
A	420	420	430	A	A	L	-	-	-	-	-	-
390	A	420	A	A	L	L	-	-	-	-	-	-
B	D	A	A	410	L	L	-	-	-	-	-	-
A	A	A	B	400	L	L	-	-	-	-	-	-
400	B	C	B	390	C	L	-	-	-	-	-	-
440	C	C	C	C	C	C	-	-	-	-	-	-
400	410	B	420	410	390	L	-	-	-	-	-	-
A	A	A	A	400	A	L	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	L	-	-	-	-	-	-
A	A	A	420	410	U390C	L	-	-	-	-	-	-
420	410	420	B	410	L	L	L	-	-	-	-	-
420	420	B	410	410	410	L	-	-	-	-	-	-
420	-	410	430	410	410	A	-	-	-	-	-	-
A	420	420	410	A	A	A	-	-	-	-	-	-
400	420	400	A	A	L	L	-	-	-	-	-	-
A	A	B	B	410	L	L	-	-	-	-	-	-
425	B	B	B	B	A	L	-	-	-	-	-	-
430	430	430	120	400	L	L	-	-	-	-	-	-
430	A	A	A	400	L	L	-	-	-	-	-	-
420	430	430	420	400	L	L	-	-	-	-	-	-
A	A	A	B	410	L	L	-	-	-	-	-	-
C	C	C	C	B	L	L	-	-	-	-	-	-
A	A	A	A	400	L	C	-	-	-	-	-	-
410	430	410	430	L	L	L	-	-	-	-	-	-
A	A	420	A	390	L	A	-	-	-	-	-	-
A	400	A	A	L	A	-	-	-	-	-	-	-
410	A	420	400	A	A	A	-	-	-	-	-	-
415	420	420	420	408	400	-	-	-	-	-	-	-
16	11	13	12	18	6	-	-	-	-	-	-	-
423	430	430	425	410	410	-	-	-	-	-	-	-
400	410	415	410	400	390	-	-	-	-	-	-	-
22	20	15	15	10	20	-	-	-	-	-	-	-

This bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

2

Characteristic: foE

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc in 10
August 1964

Observer: at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	A	A	A	A	B
2	-	-	-	-	-	-	C	C	C	C	A	A
3	-	-	-	-	-	-	-	A	A	A	A	A
4	-	-	-	-	-	-	-	B	C	A	A	A
5	-	-	-	-	-	-	-	A	A	A	B	A
6	-	-	-	-	-	-	-	A	A	A	A	B
7	-	-	-	-	-	-	-	A	A	A	A	A
8	-	-	-	-	-	-	-	A	A	A	A	A
9	-	-	-	-	-	-	C	C	C	C	C	A
10	-	-	-	-	-	-	-	A	A	A	A	A
11	-	-	-	-	-	-	-	A	A	A	A	A
12	-	-	-	-	-	-	-	A	A	A	A	A
13	-	-	-	-	-	-	-	A	A	A	A	A
14	-	-	-	-	-	-	-	A	A	A	A	A
15	-	-	-	-	-	-	-	A	A	A	A	A
16	-	-	-	-	-	-	-	A	A	A	A	A
17	-	-	-	-	-	-	-	A	A	A	A	A
18	-	-	-	-	-	-	-	A	A	A	A	A
19	-	-	-	-	-	-	-	A	A	A	A	A
20	-	-	-	-	-	-	-	A	A	A	A	A
21	-	-	-	-	-	-	-	B	A	A	A	A
22	-	-	-	-	-	-	-	A	A	A	A	A
23	-	-	-	-	-	-	-	A	A	A	A	B
24	-	-	-	-	-	-	-	A	A	A	A	B
25	-	-	-	-	-	-	-	A	A	A	A	C
26	-	-	-	-	-	-	-	A	A	C	C	C
27	-	-	-	-	-	-	-	A	A	A	A	A
28	-	-	-	-	-	-	-	A	A	A	A	A
29	-	-	-	-	-	-	-	A	A	A	A	A
30	-	-	-	C	C	C	C	C	C	C	C	A
31	-	-	-	-	-	-	-	A	A	A	A	B
Median	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	-	-	-	-	-
UQ	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-

* Tabulation of 240 = 2.4 Mc.

ATTENTION: The accuracy of the frequency parameters in this bol of the C-2 sounder from 15 July to 21 September 1964. The origi error is estimated to have been approximately 1 Mc.

PHERIC DATA
 25 Mc in 0.5 minute
 1st 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
B	B	B	R	B	A	-	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
B	B	A	A	A	A	A	-	-	-	-	-	-
A	A	A	B	B	B	B	-	-	-	-	-	-
A	B	C	B	A	C	C	-	-	-	-	-	-
A	C	C	C	C	C	C	-	-	-	-	-	-
A	A	B	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	B	B	A	A	-	-	-	-	-	-
A	A	B	B	B	B	B	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	B	B	B	A	A	-	-	-	-	-	-
A	B	B	A	A	A	S	-	-	-	-	-	-
B	B	A	A	A	A	A	-	-	-	-	-	-
A	A	C	C	B	A	C	-	-	-	-	-	-
A	C	A	A	A	R	B	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
B	A	A	A	A	A	A	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	1	-	1	2	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

in this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

g

Characteristic: b'E

IONOSPHERIC I
Sweep: 1 Mc to 25 Mc

August 196

Observed at:
Bangkok, Thailand
Lat. 13.73° N. Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	-	A	110*	A	A	B
2	-	-	-	-	-	-	C	C	C	C	A	A
3	-	-	-	-	-	-	-	A	A	110	A	A
4	-	-	-	-	-	-	-	B	C	A	A	A
5	-	-	-	-	-	-	-	A	A	A	B	A
6	-	-	-	-	-	-	-	A	A	A	A	B
7	-	-	-	-	-	-	-	A	A	A	A	A
8	-	-	-	-	-	-	-	A	A	A	A	A
9	-	-	-	-	-	-	C	C	C	C	C	A
10	-	-	-	-	-	-	-	A	A	A	110	110
11	-	-	-	-	-	-	-	A	110	110	A	A
12	-	-	-	-	-	-	-	A	110	110	110	110
13	-	-	-	-	-	-	-	A	110	A	A	A
14	-	-	-	-	-	-	-	A	A	110	A	A
15	-	-	-	-	-	-	-	A	A	A	A	A
16	-	-	-	-	-	-	-	A	A	105	A	A
17	-	-	-	-	-	-	-	A	A	A	A	A
18	-	-	-	-	-	-	-	A	110	100	A	A
19	-	-	-	-	-	-	-	A	A	A	A	A
20	-	-	-	-	-	-	-	A	A	A	A	A
21	-	-	-	-	-	-	-	B	A	A	A	A
22	-	-	-	-	-	-	-	A	A	A	A	A
23	-	-	-	-	-	-	-	A	A	A	A	B
24	-	-	-	-	-	-	-	A	120	A	A	B
25	-	-	-	-	-	-	-	A	A	A	A	C
26	-	-	-	-	-	-	-	A	110	C	C	C
27	-	-	-	-	-	-	-	A	A	A	A	A
28	-	-	-	-	-	-	-	A	A	A	105	A
29	-	-	-	-	-	-	-	A	110	115	110	A
30	-	-	-	C	C	C	C	C	C	C	C	A
31	-	-	-	-	-	-	-	A	A	A	A	B
Median	-	-	-	-	-	-	-	-	110	110	110	11
Count	-	-	-	-	-	-	-	-	8	7	4	2
UQ	-	-	-	-	-	-	-	-	110	110	110	-
LQ	-	-	-	-	-	-	-	-	110	105	105	-
QR	-	-	-	-	-	-	-	-	0	5	2	-

* Tabulation of 110 = 110 km.

ATTENTION: The accuracy of the frequency parameters in this of the C-2 sounder from 15 July to 21 September 1964. The or error is estimated to have been approximately 1 Mc.

ERIC DATA
 15 Mc in 0.5 minute
 st 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
B	B	E	110	B	105	-	-	-	-	-	-	-
A	A	A	A	110	105	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
B	B	A	A	A	A	A	-	-	-	-	-	-
A	A	A	B	B	B	B	-	-	-	-	-	-
A	B	C	B	A	C	B	-	-	-	-	-	-
A	C	C	C	C	C	C	-	-	-	-	-	-
110	A	B	110	110	110	A	-	-	-	-	-	-
A	A	A	A	110	A	B	-	-	-	-	-	-
110	A	105	105	100	110	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	-	B	A	E170B	A	-	-	-	-	-	-
A	A	B	B	B	100	B	A	-	-	-	-	-
A	A	B	B	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	B	B	110	110	A	-	-	-	-	-	-
A	B	B	B	B	A	A	-	-	-	-	-	-
A	B	105	A	A	110	S	-	-	-	-	-	-
B	A	A	A	A	A	A	-	-	-	-	-	-
B	B	B	A	A	A	A	-	-	-	-	-	-
A	A	A	B	A	A	A	-	-	-	-	-	-
C	C	C	C	B	110	S	-	-	-	-	-	-
A	A	A	A	B	115	C	-	-	-	-	-	-
A	B	105	A	A	110	B	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
A	A	A	A	A	A	A	-	-	-	-	-	-
B	A	A	A	110	110	A	-	-	-	-	-	-
110	-	105	110	110	110	-	-	-	-	-	-	-
2	-	3	3	6	12	-	-	-	-	-	-	-
-	-	105	110	110	110	-	-	-	-	-	-	-
-	-	105	108	110	108	-	-	-	-	-	-	-
-	-	0	2	0	2	-	-	-	-	-	-	-

this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

2

Characteristic: f_{BE}

IONOSPHERIC DATA
Sweep: 1 Mc to 25 Mc
August 1944

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	-	-	-	-	-	-	027*	029	035	038	-	B
2	-	-	C	C	C	C	C	C	C	C	065	039
3	B	B	B	B	B	-	028	031	035	036	035	035
4	B	B	B	B	B	B	B	B	C	039	-	045
5	-	-	-	-	-	B	-	030	034	035	B	037
6	027	-	-	-	-	-	-	-	040	042	-	B
7	-	-	-	-	C	-	027	033	-	-	-	-
8	027	029	B	-	-	025	-	030	044	039	040	038
9	C	C	C	C	C	C	C	C	C	C	C	036
10	B	-	E	-	B	U026C	027	030	032	035	038	040
11	B	B	B	B	B	B	-	028	035	038	038	048
12	028	034	-	-	-	-	S	030	036	040	045	050
13	-	-	-	-	-	-	-	030	037	040	050	-
14	S	C	C	-	B	B	C	U033C	U036C	U037C	U035C	052
15	B	B	B	U027C	C	C	C	U030C	U038C	U039C	U038C	037
16	026	-	B	B	B	B	-	027	045	038	036	036
17	B	B	B	B	023	-	-	028	036	051	037	040
18	B	B	B	B	B	024	B	031	036	043	056	063
19	B	B	B	B	B	C	U027C	U034C	038	035	040	040
20	-	026	-	-	-	-	S	032	033	035	037	057
21	024	024	027	-	-	-	-	B	032	051	040	-
22	B	B	B	B	B	B	S	027	047	037	035	033
23	B	B	B	B	B	B	S	-	032	033	038	B
24	B	B	B	B	B	B	S	030	031	038	039	B
25	-	-	-	-	B	B	B	029	039	036	036	042
26	-	-	-	-	-	-	027	030	040	C	C	C
27	-	-	-	B	B	B	029	-	032	039	050	043
28	-	B	B	B	B	B	025	031	036	036	039	038
29	-	-	B	-	-	-	-	028	036	040	047	045
30	B	B	-	C	C	C	C	C	C	C	C	-
31	-	-	-	-	-	-	-	045	041	049	044	B
Median	027	028	-	-	-	025	027	030	036	038	039	040
Count	5	4	1	1	1	3	8	23	26	25	24	21
UQ	027	032	-	-	-	026	028	031	039	040	046	046
LQ	025	025	-	-	-	024	027	029	034	036	037	037
QR	2	7	-	-	-	2	1	2	5	6	9	9

* Tabulation of 027 = 2.7 Mc.

ATTENTION: The accuracy of the frequency parameters in this bulletin of the C-2 sounder from 15 July to 21 September 1944. The original error is estimated to have been approximately 1 Mc.

SPHERIC DATA
 25 Mc in 0.5 minute
 August 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
	B	B	B	B	B	033	033	S	S	B	S	S	B
5	039	041	038	038	035	038	033	-	B	S	B	B	B
5	035	-	045	-	041	040	060	038	053	035	035	-	-
	045	039	038	038	046	039	032	028	-	023	B	-	B
	037	043	037	044	041	033	028	-	031	027	027	-	-
	B	B	050	042	036	036	031	031	029	B	-	-	B
	-	-	-	B	B	B	B	C	C	-	-	B	-
0	038	B	C	B	034	C	B	B	C	C	C	C	C
	036	C	C	C	C	C	C	C	C	-	031	S	S
8	040	-	1	037	039	035	029	S	B	B	B	B	B
3	048	-	-	048	038	-	B	028	S	-	-	032	-
6	050	-	050	-	-	059	045	056	058	-	034	033	035
0	-	U040C	C	U046C	043	-	-	-	S	027	S	S	S
5C	052	050	044	B	034	B	U034C	S	B	S	S	S	B
8C	037	039	B	B	B	B	B	027	B	B	027	026	026
5	036	036	F	B	031	032	028	026	030	026	B	B	B
7	040	042	040	038	036	036	055	052	051	043	026	029	036
0	063	041	039	039	050	042	037	031	U029C	-	B	B	B
0	040	040	040	044	046	035	032	027	030	-	026	026	B
7	057	043	B	B	B	033	033	027	028	027	-	B	-
0	-	B	B	B	B	050	029	028	035	026	B	B	B
5	033	B	B	037	036	B	S	S	S	S	B	B	B
8	B	045	044	044	037	033	031	029	028	B	B	B	B
9	B	B	B	037	035	032	032	027	028	S	S	S	B
6	042	-	044	B	040	035	030	034	027	035	B	033	-
	C	C	C	C	B	035	S	S	B	B	024	026	026
0	043	050	050	050	B	B	C	C	B	027	032	030	028
9	038	B	038	034	038	037	B	B	B	B	-	B	-
7	045	050	041	043	037	036	050	037	028	-	025	-	B
	-	-	039	046	048	037	042	030	029	B	-	B	B
4	B	053	041	039	070	045	045	-	056	-	037	025	035
9	040	042	041	041	038	036	033	029	029	027	027	030	031
4	21	15	17	18	22	21	21	17	16	10	11	9	6
6	046	050	044	044	043	040	043	036	043	035	034	033	035
7	037	040	038	038	036	033	031	027	028	026	026	023	026
	9	10	6	6	7	7	12	9	15	9	8	7	9

in this bulletin is questionable because of an error in frequency markers
 The original frequency parameters have been increased by 1 Mc since the

2

Characteristic: foEs

IONOSPHERIC
Sweep: 1 Mc to 25 Mc

August 1964

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	050*	043	032	038	032	032	040	030	036	042	065	B
2	049	050	C	C	C	C	C	C	C	C	070	045
3	B	B	B	B	B	035	040	031	035	037	038	043
4	B	B	B	B	B	B	B	B	C	039	068	110
5	041	034	040	044	067	B	029	035	034	035	B	042
6	035	051	066	033	032	036	041	030	052	045	052	B
7	040	035	062	036	C	034	028	038	045	072	071	078
8	034	037	B	050	025	029	030	062	074	062	045	038
9	C	C	C	C	C	C	C	C	C	C	C	034
10	B	030	B	029	B	U030C	050	072	037	035	038	039
11	B	B	B	B	B	B	027	040	041	038	038	045
12	076	051	060	040	035	028	S	040	045	100	085	070
13	026	032	044	028	024	052	043	038	044	056	100	080
14	S	U052C	J046C	031	B	B	U037C	U042C	U045C	U045C	U052C	080
15	B	B	B	U028C	U026C	U026C	U030C	U042C	U052C	U055C	U042C	041
16	032	039	B	B	B	B	027	032	045	041	036	036
17	B	B	B	B	023	023	024	028	046	087	047	044
18	B	B	B	B	B	027	B	037	037	050	075	080
19	B	B	B	B	B	U029C	U032C	U038C	044	038	039	044
20	055	045	070	045	044	043	S	046	045	037	038	057
21	050	065	043	080	065	048	037	B	042	085	047	047
22	B	B	B	B	B	B	S	035	09L	070	035	033
23	B	B	B	B	B	B	S	046	032	039	050	B
24	B	B	B	B	B	B	S	031	031	043	J46	B
25	032	035	031	050	B	B	B	039	065	036	040	042
26	060	045	096	086	050	036	035	036	052	C	C	C
27	035	080	050	B	B	B	030	047	088	073	063	051
28	039	B	B	B	B	B	034	039	083	055	045	038
29	028	062	B	029	055	035	033	047	057	050	058	078
30	B	B	045	C	C	C	C	C	C	C	C	116
31	042	072	052	033	036	036	047	067	053	056	051	B
Median	040	045	J48	038	035	034	034	039	045	045	047	045
Count	17	18	14	16	13	17	20	26	27	27	27	25
UQ	050	052	062	050	052	036	040	046	053	062	065	079
LQ	033	035	043	030	029	029	030	035	037	038	039	040
QR	17	17	19	20	23	7	10	11	16	24	26	39

* Tabulation of 050 = 5.0 Mc.

ATTENTION: The accuracy of the frequency parameters in this book of the C-2 sounder from 15 July to 21 September 1964. The error is estimated to have been approximately 1 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute
August 1964

0	11	12	13	14	15	16	17	18	19	20	21	22	23
065	B	B	B	B	B	035	034	S	S	B	S	S	B
070	045	050	041	043	035	044	040	029	3	S	B	B	B
038	043	055	060	061	050	047	065	065	075	043	047	043	032
068	110	057	039	046	084	053	045	029	026	031	B	032	B
B	042	043	034	046	055	043	042	032	041	028	027	029	07
052	B	B	050	044	038	037	033	031	029	B	042	046	B
071	078	083	074	B	B	B	B	C	C	087	073	B	049
045	038	B	C	B	034	C	B	B	C	C	C	C	C
C	034	C	C	C	C	C	C	C	C	029	080	S	S
038	039	039	B	037	043	045	052	S	B	B	B	B	B
038	045	105	105	080	044	165	B	028	S	030	035	038	028
085	070	085	077	107	085	075	055	075	081	112	081	083	050
100	080	U070C	U065C	U043C	045	046	034	031	S	027	S	S	S
052C	080	056	040	B	034	B	U034C	S	E	S	S	S	B
042C	041	041	B	B	B	B	B	027	B	B	039	033	035
036	036	036	B	B	031	032	028	033	045	030	B	B	B
047	044	042	041	038	037	047	063	090	094	070	059	045	042
075	090	065	075	076	065	050	051	040	U044C	U032C	B	B	B
039	044	043	043	066	054	047	036	040	030	036	044	032	B
038	057	044	B	B	B	033	034	035	030	040	038	B	039
047	047	B	B	B	B	087	038	040	045	031	B	B	B
035	033	B	B	037	037	B	S	S	S	S	E	B	B
050	B	057	048	045	037	046	036	044	043	B	B	B	B
046	B	B	B	042	045	042	045	035	028	S	S	S	B
040	042	045	044	B	040	036	031	043	045	041	B	063	064
C	C	C	C	C	B	036	S	S	B	B	053	038	047
063	051	050	055	055	B	B	C	C	B	B	039	B	032
045	038	B	038	034	039	037	B	B	B	B	039	B	032
058	078	054	059	042	055	046	065	051	037	030	042	074	B
C	116	150	066	054	047	053	065	048	037	B	034	B	B
051	B	060	041	039	079	051	058	120	084	100	050	044	075
047	045	055	049	045	044	046	041	040	043	031	042	041	042
27	25	22	20	20	23	24	22	21	17	18	17	14	13
065	079	065	065	058	055	050	055	049	060	043	056	046	057
039	040	043	041	041	037	037	034	031	030	030	038	033	034
26	39	22	24	17	18	13	21	18	30	13	18	13	23

ers in this bulletin is questionable because of an error in frequency markers
1964. The original frequency parameters have been increased by 1 Mc since the
ic.

8

Characteristic: h'f_o

IONOSPHERIC I
Sweep: 1 Mc to 25 Mc
August 1964

Observed at:
Bangkok, Thailand
Lat. 13.73° N, Long. 100.57° E
105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	100*	100	100	100	100	100	100	120	110	100	110	B
2	110	100	C	C	C	C	C	C	C	C	100	100
3	B	B	B	B	B	100	100	120	120	120	105	100
4	B	B	B	B	B	B	B	B	C	105	100	100
5	100	105	100	100	100	B	105	110	110	105	B	100
6	100	100	100	100	120	100	100	105	100	100	095	B
7	120	110	100	100	C	100	110	110	100	120	118	110
8	100	100	B	110	120	110	120	110	110	110	110	110
9	C	C	C	C	C	C	C	C	C	C	C	110
10	B	100	B	100	B	120	110	115	120	110	120	120
11	B	B	B	B	B	B	130	100	110	115	120	110
12	120	120	110	110	120	110	S	120	115	115	110	110
13	090	100	100	100	120	105	100	110	110	100	110	110
14	S	100	100	095	B	B	110	110	110	110	100	100
15	B	B	B	115	120	110	110	110	110	100	100	100
16	100	090	B	B	B	B	100	110	100	103	105	105
17	B	B	B	B	110	110	110	110	100	100	100	100
18	B	B	B	B	B	115	B	120	110	110	100	100
19	B	B	B	B	B	100	100	100	100	100	100	100
20	100	120	100	100	100	100	S	110	110	110	100	100
21	100	100	100	100	100	100	100	B	100	100	100	100
22	B	B	B	B	B	B	S	105	100	100	100	110
23	B	B	B	B	B	B	S	100	100	100	100	B
24	B	B	B	B	B	B	S	115	130	100	100	B
25	105	100	100	100	B	B	B	140	100	100	100	100
26	105	100	100	100	100	100	100	110	120	C	C	C
27	100	100	100	B	B	B	110	110	115	115	120	120
28	100	B	B	B	B	B	100	110	110	110	105	100
29	100	100	B	130	110	100	110	110	110	120	115	110
30	B	B	100	C	C	C	C	C	C	C	C	100
31	105	100	100	100	100	100	100	110	112	110	110	B
Median	100	100	100	100	110	100	102	110	110	105	100	100
Count	17	18	14	16	13	17	20	26	28	27	27	25
UQ	105	100	100	105	120	110	110	115	113	110	110	110
LQ	100	100	100	100	100	100	100	110	100	100	100	100
QR	5	0	0	5	20	10	10	5	13	10	10	10

* Tabulation of 100 = 100 km.

ATTENTION: The accuracy of the frequency parameters in this bul of the C-2 sounder from 15 July to 21 September 1964. The origi error is estimated to have been approximately 1 Mc.

OSPHERIC DATA
to 25 Mc in 0.5 minute
August 1964

	11	12	13	14	15	16	17	18	19	20	21	22	23
0	B	B	B	B	B	110	110	S	S	B	S	S	B
00	100	100	100	100	120	110	110	110	B	S	B	B	B
05	100	100	100	100	110	110	100	100	100	100	100	100	100
00	100	100	100	100	090	090	090	090	120	100	B	120	B
5	100	100	100	100	100	100	100	100	090	90	090	100	100
05	B	B	100	090	090	090	095	090	095	B	100	100	B
8	110	110	105	B	B	B	B	C	C	100	100	B	100
10	110	B	C	B	100	C	B	B	C	C	C	C	C
2	110	C	C	C	C	C	C	C	C	100	100	S	S
20	120	120	B	118	110	105	100	S	B	B	B	B	B
20	110	105	100	100	105	100	100	100	S	110	120	100	100
0	110	110	100	100	100	105	100	100	100	100	100	100	100
10	110	110	100	100	110	110	100	100	S	120	S	S	S
00	100	100	090	B	090	B	150	S	B	S	S	S	B
00	100	100	B	B	B	B	B	118	B	B	100	100	100
05	105	100	B	B	105	110	110	090	090	090	B	B	B
00	100	100	100	090	100	090	090	090	090	090	100	100	100
00	100	100	100	100	100	090	090	090	090	110	B	B	B
00	100	100	100	090	090	090	090	090	110	110	105	110	B
00	100	110	B	B	B	170	120	110	110	110	110	B	110
00	100	-	-	-	-	100	100	100	090	090	B	B	B
00	110	B	B	090	100	B	S	S	S	S	B	B	B
00	E	100	100	090	100	100	100	090	090	B	B	B	B
00	B	B	B	100	100	090	090	090	090	S	S	B	B
00	100	100	100	B	140	140	U120C	110	110	110	B	100	100
2	C	C	C	C	B	130	S	S	B	B	110	105	100
20	120	095	100	095	B	B	C	C	B	105	105	105	100
25	100	B	110	105	110	140	B	B	B	B	100	B	100
15	110	115	110	110	110	100	100	100	100	110	110	110	B
2	100	100	100	100	095	100	100	100	090	B	110	B	B
0	B	110	120	120	105	110	110	100	110	100	100	100	100
00	100	100	100	100	100	103	100	100	100	100	100	100	100
27	25	22	20	20	23	24	22	21	17	18	17	14	13
10	110	110	100	100	110	110	110	100	110	110	110	105	100
00	100	100	100	093	100	095	095	090	090	100	100	100	100
0	10	10	0	7	10	15	15	10	20	10	10	5	0

in this bulletin is questionable because of an error in frequency markers
4. The original frequency parameters have been increased by 1 Mc since the

2

Characteristic: Type of Es

IONOSPHERIC

Sweep: 1 Mc to 25 Mc

August 1964

Observed at:

Bangkok, Thailand

Lat. 13.73° N, Long. 100.57° E

105° E Mean Time (GMT + 7 hours)

Hour Date	00	01	02	03	04	05	06	07	08	09	10	11
1	f	f3	f6	f4	f	f	f	h	e	cl	l	-
2	f	f	-	-	-	-	-	-	-	-	lc	lh
3	-	-	-	-	-	f	f	h	h	h	l	l
4	-	-	-	-	-	-	-	-	-	-	l	l
5	f3	f2	f2	f2	f3	-	f	l	lc	l	-	l
6	f2	f2	f5	f	f	f3	f5	l	l	l	f2	-
7	f	f	f	f	-	f2	f	l	l	l	l	l
8	f	f	-	f	f	f	f	l	f3	l2	l	c
9	-	-	-	-	-	-	-	-	-	-	-	l
10	-	f	-	f	-	f	f	l	l	l	c	c
11	-	-	-	-	-	-	l	l	c	c	c	l2
12	f2	f2	f4	f2	f	f	-	l	l	l	l2	l
13	f	f	f3	f3	f	f5	f	l	l	l2	l2	l2
14	-	f2	f2	f2	-	-	f	l	l	c	l	l2
15	-	-	-	f	f	f	f	l	l2	l	cl	l
16	f	f3	-	-	-	-	f	l	l2	l	l	l
17	-	-	-	-	f2	f	f	l	l	f3	l	l
18	-	-	-	-	-	f	-	l	c	c	f2	l3
19	-	-	-	-	-	f2	f2	l	l2	l	l	l
20	f3	f	f3	f6	f3	f2	-	l2	l	l	l	l
21	f3	f	f3	f3	f4	f2	f	-	l	l2	l2	l
22	-	-	-	-	-	-	-	l	f3	l2	l	l
23	-	-	-	-	-	-	-	l	l	l	l	-
24	-	-	-	-	-	-	-	c	h	l	l	-
25	f	f	f	f3	-	-	-	h	l2	l	l	l
26	f7	f2	f6	f6	f4	f	f	h	h	-	-	-
27	f	f2	f2	-	-	-	f	l	l	c	c	c
28	f	-	-	-	-	-	f	l	l2	l	l	l
29	f	f3	-	f	f3	f3	f	l	l	c	c	c
30	-	-	f	-	-	-	-	-	-	-	-	l3
31	f	f5	f3	f2	f2	f2	f2	f3	f2	l	l	-
Median	-	-	-	-	-	-	-	-	-	-	-	-
Count	-	-	-	-	-	-	-	-	-	-	-	-
UQ	-	-	-	-	-	-	-	-	-	-	-	-
LQ	-	-	-	-	-	-	-	-	-	-	-	-
QR	-	-	-	-	-	-	-	-	-	-	-	-

ATTENTION: The accuracy of the frequency parameters in this book is of the C-2 sounder from 15 July to 21 September 1964. The original error is estimated to have been approximately 1 Mc.

ICHERIC DATA
 25 Mc in 0.5 minute
 st 1964

11	12	13	14	15	16	17	18	19	20	21	22	23
-	-	-	-	-	L	L	-	-	-	-	-	-
Lh	L	L	L	h	c	L	f	-	-	-	-	-
L	L	L	L3c	c	c	L2	f5	f4	f4	f	f2	f
L	L	Lh	L3	L2	L3	L2	f	f	f	f	f	-
L	L	L	L	L	L2	L	f	f4	f	f	f	f2
-	-	f	L2	L	L	L	f	f	-	f	f4	-
L	L2	L	-	-	-	-	-	-	f4	f4	-	f
c	-	-	-	L	-	-	-	-	-	-	-	-
L	-	-	-	-	-	-	-	-	f	f4	-	-
c	c	-	c	c	c	L	-	-	-	-	-	-
L2	L3	L4	L2	L	L3	-	f	-	f	f	f	f
L	L2	L	L3	L3	L2	L2	f5	f5	f	f3	f5	f3
L2	L	L2	L	L	L	L	f	-	-	-	-	-
L2	L	L	-	-	-	h	-	-	-	-	-	-
L	L	-	-	-	-	-	h	-	-	f3	f3	f
L	L	-	-	L	ch	L	L	f4	f	-	-	-
L	L	Lc	Lc	L	L	L3	f3	f3	f4	f2	f2	f
L3	L	L	L	L2	L3	L	f2	f	f	-	-	-
L	L	L	L2	L3	L3	Lh	f2	f	f2	f3	f2	-
L	L	-	-	-	h	L	f	f	f	f	-	f2
L	-	-	-	-	L3	L	fL	f5	f	-	-	-
-	L2	L2	L	L	-	-	-	-	-	-	-	-
-	-	-	-	L	L	L	f2	f	-	-	-	-
-	L	L	-	h	L	L	f2	f4	f2	-	f3	f5
-	-	-	-	-	h	-	-	-	-	f2	f	f2
c	Lc	Lc	Lc	-	-	-	-	-	f	f	f	f
L	-	c	L	L	L	-	-	-	-	f	-	f
L3	c	c	c	L	L	L3	f3	f2	f	f	f2	-
L3	L	L	L	L	L2	L3	f3	f3	-	f	-	-
-	L	c	c	L	L	L2	f5	f6	f6	f3	f3	f2
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	-

this bulletin is questionable because of an error in frequency markers
 the original frequency parameters have been increased by 1 Mc since the

MEDIAN VALUES AUGUST 1964

Hour Local	fmin (Mc)	foF2 (Mc)	M(3000)F2	h'F2 (km)	h'F (km)	foF1 (Mc)	M(3000)F1	foE (Mc)	h'E (km)	fbEs (Mc)	foEs (Mc)	h'Es (km)
00	3.4	3.2	3.00	-	305	-	-	-	-	2.7	5.5	100
01	3.3	3.3	3.10	-	300	-	-	-	-	2.8	4.9	100
02	3.1	2.7	3.50	-	270	-	-	-	-	-	4.5	100
03	2.8	2.8	3.55	-	260	-	-	-	-	-	4.4	100
04	2.7	2.6	3.40	-	300	-	-	-	-	-	4.6	110
05	2.7	2.7*	-	-	340	-	-	-	-	2.5	4.1	100
06	2.5	3.5	3.40	-	250	-	-	-	-	2.7	4.0	102
07	2.4	5.4	3.40	-	220	-	-	-	-	3.0	4.3	110
08	2.5	6.1	3.20	300	220	-	-	-	110	3.6	3.1	110
09	2.5	6.6	2.70	370	200	4.1	4.00	-	110	3.8	4.2	105
10	2.4	6.5	2.43	405	190	4.2	4.20	-	110	3.9	4.1	100
11	2.5	6.2	3.35	430	190	4.3	4.15	-	-	4.0	4.2	100
12	2.4	6.0	2.40	455	200	4.3	4.20	-	-	4.2	4.0	100
13	2.3	6.3	2.50	415	190	4.3	4.20	-	105	4.1	4.5	100
14	2.3	6.5	2.50	400	200	4.2	4.20	-	110	1.1	4.8	100
15	2.3	6.6	2.70	370	200	4.1	4.08	-	110	3.8	3.0	100
16	2.3	7.2	2.80	350	210	4.1	4.00	-	110	3.6	3.5	103
17	2.3	7.6	3.00	300	210	-	-	-	-	3.3	3.4	100
18	2.4	8.2	3.20	-	230	-	-	-	-	2.9	3.4	100
19	2.5	7.6	3.40	-	220	-	-	-	-	2.9	3.9	100
20	2.7	6.1	3.40	-	220	-	-	-	-	2.7	4.5	100
21	2.8	5.1	3.30	-	245	-	-	-	-	2.7	4.5	100
22	3.0	4.0	3.20	-	270	-	-	-	-	3.0	4.7	100
23	3.3	3.6	3.10	-	300	-	-	-	-	3.1	4.5	100

* Insufficient data for reliable median.

IONOSPHERIC DATA
MONTHLY MEDIAN CHARACTERISTICS
BANGKOK, THAI AND
AUGUST 1964

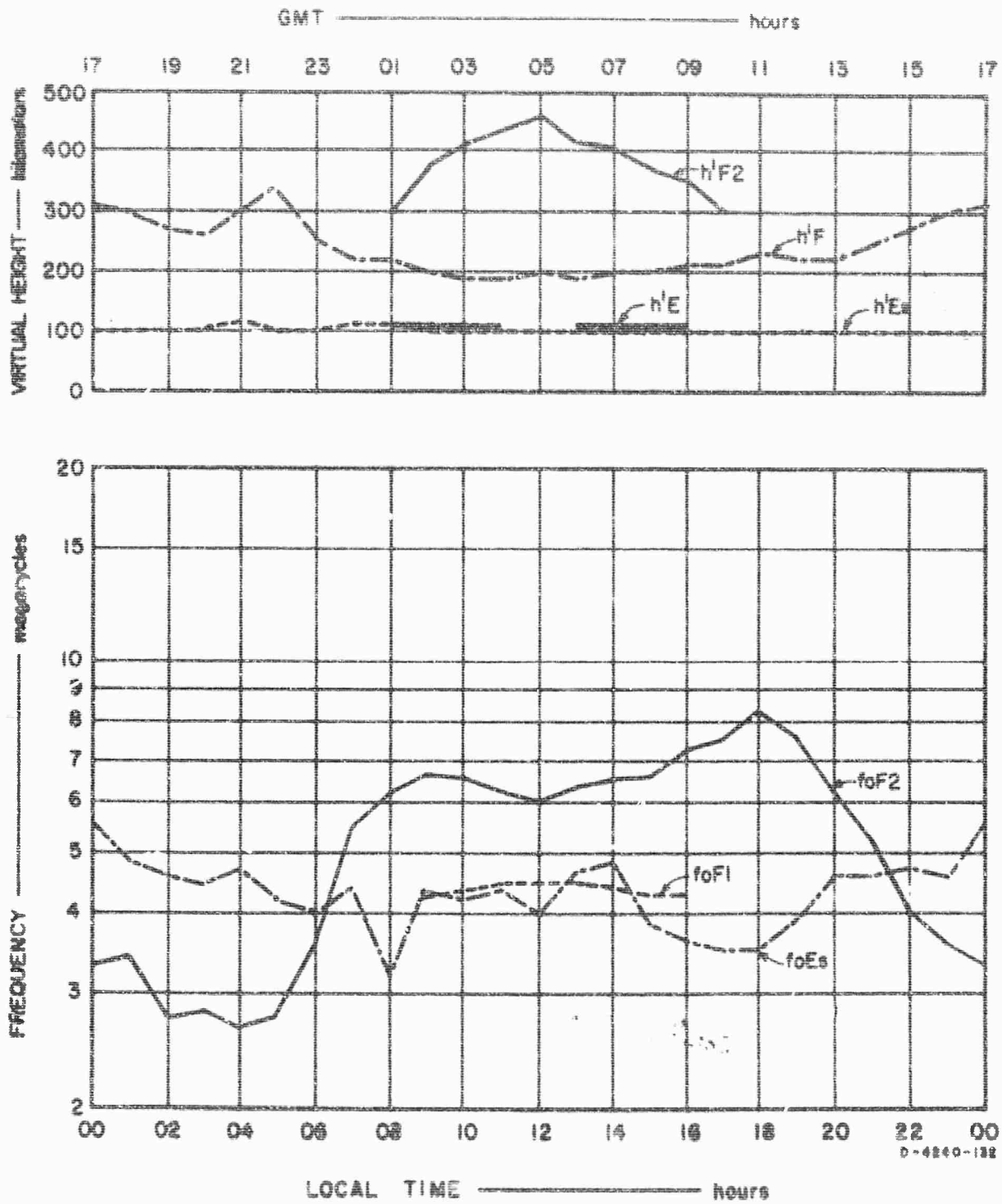


FIG. 1 SUMMARY GRAPHS

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